



Department of Pesticide Regulation



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MEMORANDUM

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TO: Joseph P. Frank, Senior Toxicologist
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FROM: Harvard R. Fong, CIH, Senior Industrial Hygienist *[original signed by H. Fong]*
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SUBJECT: REVIEW OF PROPOSED FUMITOXIN LABEL (TRACKING ID# 204014)

I have reviewed the document "Applicator's Manual For Fumitoxin Tablets and Pellets" (Proposed label) and have the following specific comments concerning industrial hygiene aspects of this document:

- Page 3; **4.2 Physical and Chemical Hazards**, second paragraph: Use of the phrase "allowable limits". Better and more descriptive phrase "permissible exposure limit (PEL) of 0.3 PPM". DPR cites use of the Cal/OSHA PELs via Title 3, CCR Section 6738 (h)(1): *Employees use approved respiratory protective equipment when pesticide product labeling or regulations require respiratory protection or when respiratory protection is needed to maintain employee exposure below an applicable exposure standard found in Title 8, California Code of Regulations, Section 5155.* This phrasing is used through the document and should be changed in all instances. Also in that same sentence, the opening of containers is allowed, providing that worker's exposure does not exceed "allowable limits". How this is to be measured is unmentioned. Unless the worker is wearing a constant monitoring device, containers must be opened outside.
- Page 9; **10.2 Permissible Gas Concentration Range for Respiratory Protection Devices**: The identifier "(TC-14G)" should be used after the first mention of "NIOSH/MSHA approved full-face gas mask". Likewise, "(TC-13F)" should be used after first mention of SCBA in this section. This phrasing is also used in page 28; **28.2 Direction for Deactivation of Partially Spent Residual Dust from Fumitoxin** and should also be so modified. In citing the NIOSH ALERT (DHHS/NIOSH Publication No. 99-126), it would be better if "Table One" of the ALERT were inserted here. Simply citing it does not provide it to the user.
- Page 10; **13 Gas Detection Equipment**: This section does not adequately identify the limitations of the types of monitoring devices. Colorimetric tubes ("glass detection tubes") are only good for grab-sampling and cannot be relied on for continuous monitoring. They are primarily used to test and characterize air concentrations for a specific moment or condition. In this regard they are a static measuring system. They are good at assessing equilibrated air levels or areas of suspected leakage. An electronic



device that provides real-time air-level monitoring is superior for testing dynamic conditions, such as gas evolution or gas levels in the processing of equilibrating.

- Page 11; **15.2 Application of Fumigant**: Use of the phrase “allowable limits”. Better and more descriptive phrase such as “permissible exposure limit (PEL) of 0.3 ppm”. This phrasing is used through the document and should be changed in all instances. Also “approved respiratory” should be “appropriate respiratory”. A gas mask is approved but not appropriate in all potential conditions.
- Page 11; **15.3 Leakage from Fumigated Sites**: Change “safe level” to “the PEL of 0.3 ppm”. This phrasing is used through the document and should be changed in all instances.
- Page 11; **15.6 Industrial Hygiene Monitoring**: I would think that “Industrial Hygiene Monitoring” would be performed by an industrial hygienist, though there is no mention of such in this section. This section leaves much to be desired. It assumes a level of air monitoring training and competence that is not required nor specified by the manual. There is insufficient guidance (where exactly is “where exposures may occur” and how is this determined and what excludes or includes an area for monitoring); lack of definition (“worker’s breathing zone”) and a general inadequacy in describing monitoring procedures. This section should be renamed “Air Monitoring” and should have better guidelines as to doing such. This would include, but is not limited to:
 - Define worker-breathing zone.
 - Define critical monitoring points (tablet introduction, container sealing, fumigant release, testing of previously identified areas of concern for leakage, etc.)
 - Identification of biased sampling (i.e., taking an area air sample by an open door as opposed to within a bin storage area).
 - Define area vs. personnel sampling and discuss their appropriate uses.
 - Discuss the strengths and weakness of grab-sampling (colorimetric tubes), continuous monitoring devices and industrial hygiene surveys (use of absorptive sampling tubes and laboratory analysis).
 - Define “spot checks” and their appropriate use and locations.
- Page 12; **17 Sealing of Structures**: In the second paragraph, there is mention of “...following proper procedures to prevent accidental poisoning...” regarding respiratory protection. It would be useful if the “proper procedures” sections were stated (i.e., Sections 9 and 10).
- Page 14; **21 Fumigation Management Plan**: In point 5 of this section, there is the sentence, “This plan must also demonstrate that nearby residents will not be exposed to

concentrations above the allowable limits.” Permissible exposure limits (PEL) are designed for “...*concentration limits for airborne contaminants to which nearly all workers may be exposed daily during a 40-hour workweek for a working lifetime without adverse effect. Because of some variation in individual susceptibility, an occasional worker may suffer discomfort, aggravation of a pre-existing condition, or occupational disease upon exposure to concentrations even below the values specified in these tables*”. (Cal/OSHA Title 8, CCR Section 5155: Airborne Contaminates. Emphasis added).

Under Title 3, CCR Section 6738 (h) The employer shall assure that: 1) **Employees** use approved respiratory protective equipment when pesticide product labeling or regulations require respiratory protection or when respiratory protection is needed to maintain **employee** exposure below an applicable exposure standard found in Title 8, California Code of Regulations, Section 5155 (Emphasis added). Generally, PELs should not be applied to “nearby residents”. As a general practice, an action level (defined as ½ the PEL) should be used as the maximum level of exposure to nearby residents. PELs are not community exposure standards.

Note: Worker Health and Safety (WHS) Branch did not consult with Medical Toxicology (MT) Branch to determine the appropriate standard that should be used to protect residents. WHS is only referencing a known standard (e.g., PEL).

- Page 16; **C. Monitoring**: See concerns previously mentioned under **15.6 Industrial Hygiene Monitoring** and **21 Fumigation Management Plan**. Once again, it must be stressed that PELs are not community exposure standards.
- Page 17; **E. Sealing Procedures**: It should be required that whenever possible lockout devices (clamshell locks, hasp-locks that only the fumigator has keys to, etc.) are used to prevent entry into fumigant retaining structures. This should also be followed in accordance with the instructions found on page 20, **22.4 Mills, Food Processing Plants and Warehouses**. In point 9 of that section, doors (or any other access-ways) leading to the fumigated space should be “...closed, sealed, locked (with the applicator having the only key[s]) and placarded...”
- Page 17; **F Application Procedures and Fumigation Period**: In point 5, there is a recommendation for following (Federal) OSHA confined space rules (General Environmental Controls, Permit-required Confined Spaces 29 CFR 1910.146. These rules may not apply to some of the fumigation scenarios allowed in this manual. A more applicable standard would be OSHA’s Toxic and Hazardous Substances, Air Contamination 29 CFR 1910.1000.
- Page 18; **22.1 Farm Bins**: I am assuming that the phrase, “farm bin” refers to a structure like a Butler® bin or large silo-like structure. This should be clarified to exclude bulk storage bins (rigid containers, holding less than 100 ft³). The term “isolated area” should be defined. Also, the “**NOTE**” should be stricken. If monitoring equipment is not

available, and application can only be done from inside a bin, only supplied air respiratory protection (either SCBA or air-line with escape bottle) should be allowed.

- Page 28; **29.1 General Precautions and Directions**: In the second sentence, remove “or it’s equivalent” and insert “(TC-13F) or supplied air-line respirators equipped with an escape bottle (TC-19C)”. Also, the sentence following, should refer to the NIOSH table (see previous comment Page 9; **10.2 Permissible Gas Concentration Range for Respiratory Protection Devices**) for advice on the correct respiratory protection to be worn in known atmospheres.

The faults of this label are primarily the use of undefined or improper nomenclature. Certain terms (“confined space”) have a specific meaning, whereas other terms (“allowable limits”) are not correct within the context of a pesticide label. The more troubling inadequacies lie in the “Industrial Hygiene Monitoring” and “Fumigation Management Plan” sections. For Industrial Hygiene monitoring, sampling techniques and protocols should be explained in detail and entrusted to trained personnel cognizant of equipment and procedure limitations. As for the Fumigation Management Plan’s use of “allowable limits” as exposure standards for nearby residents, these limits (i.e., PELs) are not designed for non-occupational exposures and should not be used as benchmarks for exposures outside the workplace (e.g., preschools, nursing homes, hospitals, schools, etc.). It should also be mentioned that phosphine is considered at Toxic Air Contaminant according to Title 3 CCR Section 6860 **Toxic Air Contaminants List**. This may have bearing on the amount of material allowed to escape the workplace.

If this application manual is required and designated under the Memorandum of Agreement (MOA), it may be necessary for an industrial hygiene review of future submissions. If the deficiencies listed here are ubiquitous in other manuals, further action may be required to ensure that California concerns are being addressed.

If you have any questions, please contact me.

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